

REMARKS

The above amendments and these remarks are responsive to the Office Action issued on January 29, 2004. By this response claims, claims 21, 23, 26, 28, 38, 44, 46, 48 and 50 are amended, and claim 22 is cancelled without prejudice. No new matter is added. Claims 1-20, 36, 37 and 39-43 were previously withdrawn from consideration. Claims 21, 23-26, 28-35, 38 and 44-50 are now active for examination.

The Office Action dated January 29, 2004 rejected claims 21, 22, 28-31, 34, 35, 38, 44-47, 49 and 50 under 35 U.S.C. §102(e) as being anticipated by Arnoul et al. (U.S. Patent No. 6,594,600). Claims 21, 23-26, 32, 33, 46 and 48 stand rejected under 35 U.S.C. §102(b) as being anticipated by Dale (U.S. Patent No. 5,531,030). Claims 28-30 and 44 were rejected under 35 U.S.C. §112, second paragraph for formality reasons.

The Examiner is thanked for the courtesy of two telephone discussions of differences between the application and the cited references on March 15 and 16, 2004. During the discussions, the Examiner acknowledged that Arnoul or Dale does not teach a periodic comparison between calibration measurements and a stored reference value, which is discussed in the application but unclaimed.

The rejections are respectfully traversed in view of the claim amendments and remarks presented herein.

The anticipation rejection of claim 22 is moot

By this response, claim 22 is cancelled without prejudice. Thus, the rejection of claim 22 is now moot.

The anticipation rejection based on Arnoul is traversed

Claims 21, 28-31, 34, 35, 38, 44-47, 49 and 50 were rejected as being anticipated by Arnoul. The anticipation rejection is overcome because Arnoul does not teach every limitation of claims 21, 28-31, 34, 35, 38, 44-47, 49 and 50 after the claim amendment presented herein.

Claim 21, as amended, recites:

A wheel alignment method using...a first measuring device and a second measuring device, ...the method comprising the steps of:
 mounting a first calibration target in a first fixed predetermined relationship to the first measuring device...;
 mounting a third measuring device in a second fixed predetermined relationship to the second measuring device of the machine measuring system...;
 storing a reference value that represents a reference position of the first calibration target relative to the third measuring device;
 repeatedly determining a...position of the first measuring device relative to the second measuring device based on a position of the first calibration target relative to the third measuring device;
 calculating alignment parameters of the vehicle based on the relative measuring-device position value, the first fixed predetermined relationship, the second fixed predetermined relationship, the positional parameter of the first wheel, and the positional parameter of the second wheel; and
 periodically comparing the reference value with a new measurement of the relative position between the third measuring device and the calibration target.

Thus, a wheel alignment method according to claim 21 uses two image-capturing devices, such as cameras, to measure positional parameters of wheels. A calibration target and a calibration measuring device are mounted to the alignment cameras respectively in known positional relationships. The calibration measuring device aims at the calibration target and determines a relative positional relationship therebetween. The relative position between the two alignment cameras can then be determined based on the positional relationship between the calibration target and camera, and the relative

positional relationship between the alignment camera and the calibration camera attached thereto, and the relative positional relationship between the alignment camera and the calibration target attached thereto. In addition, a reference value of the first calibration target relative to the third measuring device is stored, and new measurements of the relative position between the third measuring device and the calibration target are compared with the reference value periodically. Appropriate support for the amendment can be found in, for example, page 16, lines 19-25 of the application.

Although Arnoul uses two alignment cameras for measuring targets attached to vehicle wheels, and a set of calibration camera and target to determine the relative position between the two alignment cameras, as acknowledged by the Examiner, Arnoul does not teach or suggest storing a reference value of the relative position between the first calibration target and the third measuring device, and comparing new measurements of the relative position between the third measuring device and the calibration target with the reference value periodically, as described in claim 21. Since Arnoul fails to teach every limitation of claim 21, Arnoul cannot support a prima facie case of anticipation. The anticipation rejection is untenable and should be withdrawn. Favorable reconsideration of claim 21 is respectfully requested.

Claims 28-31, 34, 35 and 44 depend on claim 21, directly or indirectly, and incorporate every limitation thereof. Therefore, for at least the same reasons discussed relative to claim 21, the anticipation rejection of claims 28-31, 34, 35 and 44 is untenable and should be withdrawn by virtue of their dependencies of claim 21. Favorable reconsideration of claims 28-31, 34, 35 and 44 is respectfully requested.

Claims 38, 46 and 50, as amended, discuss alignment methods using two alignment measuring devices and a set of calibration devices attached to the alignment measuring devices in known relationships, in which the calibration devices generate signals representing a relative position between the calibration devices. A reference value of the relative positions of the calibration devices is stored, and new measurements of the relative position between the calibration devices and the calibration target are compared with the reference value periodically. Appropriate support for the amendment can be found in, for example, page 16, lines 19-25 of the application.

As discussed earlier, although Arnoul uses two alignment cameras for measuring targets attached to vehicle wheels and a set of calibration camera and target to determine the relative position between the two alignment cameras, Arnoul does not teach or suggest storing a reference value of the relative position between the calibration devices, and comparing new measurements of the relative position between the calibration devices and with the reference value periodically, as described in claims 38, 46 and 50. Since Arnoul fails to teach every limitation of claims 38, 46 and 50, Arnoul cannot support a prima facie case of anticipation. The anticipation rejection is untenable and should be withdrawn. Favorable reconsideration of claims 38, 46 and 50 is respectfully requested.

Claims 45, 47 and 49 depend on claims 38 and 46, respectively, and incorporate every limitation thereof. Thus, for at least the same reasons for claims 38 and 46, the anticipation rejection of claims 45, 47 and 49 based on Arnoul is also untenable and should be withdrawn based on their respective dependencies of claims 38 and 46. Favorable reconsideration of claims 45, 47 and 49 is respectfully requested.

The anticipation rejection based on Dale is overcome

Claims 21, 23-26, 32, 33, 46 and 48 were rejected as being anticipated by Dale. The anticipation rejection is respectfully traversed because Dale cannot support a prima facie case of anticipation after the claim amendment presented herein.

Claims 21, 26 and 46, as amended, describe alignment methods using two alignment measuring devices and a set of calibration devices attached to the alignment measuring devices in known relationships, in which the calibration devices generate signals representing a relative position between the calibration devices. The alignment measuring devices and at least one of the calibration devices are image-capturing devices. A reference value of the relative positions of the calibration devices is stored, and new measurements of the relative position between the calibration devices are compared with the reference value periodically.

Dale, however, does not teach or suggest all these features. Dale describes an apparatus using additional sensors for monitoring calibration status of track toe sensors attached to different vehicle wheels. According to Dale, primary sensors, 18 and 30 are attached to two wheels LF, LR, respectively for detecting positional data of the wheels. A wide angle point source of light 42 is located in vertical alignment with detector 32, and a mirror 40 is mounted in vertical alignment with emitter 30. Light source 42 emits a beam towards mirror 40, which is then reflected back to detector 30 only when the angle between the plane of rotation of wheel LR and the reference line extending between the sensors is zero degree. Thus, if the primary sensors are in zero-set calibration, the output from the primary sensors should be zero degree when detector 32 detects the beam reflected by mirror 40. Otherwise, if the output from the primary sensor is different from

zero when detector 32 detects the reflected beam, the sensors are out of calibration. Even though a warning signal may be generated if the error is larger than a predetermined tolerance, Dale does not compare the two angles periodically, as described in claims 21 and 46. In addition, Dale uses light source and mirrors to determine alignment angles and calibration errors. Dale does not teach using image-capturing devices for the alignment measuring devices and at least one of the calibration devices, as described in claims 21 and 46.

As Dale fails to teach or suggest every limitation of claims 21 and 46, Dale cannot support a prima facie case of anticipation. The anticipation rejection is untenable and should be withdrawn. Favorable reconsideration of claims 21 and 46 is respectfully requested.

Claims 23-25, 32, 33 and 48, directly or indirectly, depend on claims 21 and 46, respectively, and incorporate every limitation thereof. Accordingly, for the same reasons for claims 21 and 46, the anticipation rejection of claims 23-26, 32, 33 and 48 is untenable and should be withdrawn by virtue of their respective dependencies of claims 21 and 46. Favorable reconsideration of claims 23-26, 32, 33 and 48 is respectfully requested.

The rejection under 35 U.S.C. §112, second paragraph is traversed

Claims 28-30 and 44 were rejected for lacking antecedent basis. By this Response, the claims are amended to provide sufficient antecedent basis. No new matter is introduced. It is submitted that claims 28-30 and 44 are now in proper form. Favorable reconsideration of claims 28-30 and 44 is respectfully requested.

CONCLUSION

Therefore, the present application claims subject matter patentable over the references of record and is in condition for allowance. Favorable reconsideration is respectfully requested. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

MCDERMOTT, WILL & EMERY

A handwritten signature in black ink that reads "Wei-Chen Chen" with a stylized flourish at the end.

Wei-Chen Nicholas Chen

Recognized under 37 CFR §10.9(b)

600 13th Street, N.W.
Washington, DC 20005-3096
(202) 756-8000 WC:apr
Facsimile: (202) 756-8087
Date: April 29, 2004